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AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALIST AFSC 3--ETC(U)
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9 OCCUPATIONAL SURVEY REPORT.
ELECTRONIC PRINCIPLES

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SYSTEMS SPECIALIST

AFSC 32854.

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USAF OCCUPATIONAL MEASUREMENT CENTER
LACKLAND AFB TEXAS 78236

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TABLE OF CONTENTS

	<u>PAGE NUMBER</u>
PREFACE -----	2
INTRODUCTION -----	3
DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI) -----	3
ADMINISTRATION -----	3
PRESENTATION OF RESULTS -----	6
APPENDIX -----	7

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PREFACE

This report presents a summary of the results of a detailed Air Force Electronic Principles Survey of the Avionic Inertial and Radar Navigation Systems Specialist, AFSC 32854.

The Electronic Principles Inventory (EPI) was developed by Major Thomas J. O'Connor and Mr. Hendrick W. Ruck and the survey data were analyzed by Captain Elena J. Weber. All are members of the Occupational Survey Branch, USAF Occupational Measurement Center, Lackland AFB, Texas.

Computer programs for analyzing the data were designed by Dr. Raymond E. Christal, Occupational and Manpower Research Division, Air Force Human Resources Laboratory (AFHRL), and were written by the Project Analysis and Programming Branch, Computational Sciences Division, AFHRL.

Distribution of this report is made upon request to the USAF Occupational Measurement Center, attention of the Chief, Occupational Survey Branch (OMY), Lackland AFB, Texas 78236.

This report has been reviewed and is approved.

JAMES A. TURNER, JR., Colonel, USAF
Commander
USAF Occupational Measurement Center

WALTER E. DRISKILL, Ph.D.
Chief, Occupational Survey Branch
USAF Occupational Measurement Center

ELECTRONIC PRINCIPLES OCCUPATIONAL SURVEY REPORT
AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALIST
AFSC 32854

INTRODUCTION

This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Avionic Inertial and Radar Navigation Systems Specialist (AFSC 32854). The data for this report were collected during the period April through June 1977.

This report describes: (1) development and administration of the survey instrument; and (2) electronic principles used by DAFSC 5-skill level personnel both CONUS and overseas and assigned to selected major commands.

DEVELOPMENT OF THE ELECTRONIC PRINCIPLES INVENTORY (EPI)

The EPI was developed by personnel from the Occupational Survey Branch who were well qualified in theoretical physics and electronics, as well as in task analysis and survey development. Over 300 maintenance personnel from SAC, TAC, ADC, MAC, and AFCS participated in the development of the inventory. Representing the five ATC training centers, electronics experts who averaged 12 years of maintenance experience and four years of electronic principles instruction experience spent several weeks refining the EPI. In addition, personnel at the Electrical Engineering Department of the USAF Academy and the Air Force Human Resources Laboratory were consulted during the development of the inventory.

The final version of the EPI used in this survey contained 1,257 items in 62 subject matter areas covering all electronic principles training given at the five ATC technical training centers. Table 1 lists the 62 subject areas.

ADMINISTRATION

The Electronic Principles Inventory was administered by mail to AFSC 32854 airmen worldwide. Responses from 220 individuals represented 19 percent of the total of all AFSC 32854 personnel. Table 2 shows the percentage distribution by major command of the survey incumbents.

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TABLE 1
EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
1	MATHEMATICS	A1	2
2	DIRECT CURRENT AND VOLTAGE	A15	2
3	RESISTANCE	A24	2
4	MULTIMETER USES	B52	3
5	ALTERNATING CURRENT	B61	4
6	INDUCTORS AND INDUCTIVE REACTANCE	B67	4
7	CAPACITORS AND CAPACITIVE REACTANCE	C92	5
8	TRANSFORMERS	C128	6
9	MAGNETISM	C171	7
10	RCL CIRCUITS	D185	8
11	SERIES AND PARALLEL RESONANCE (TIME CONSTANTS)	D229	10
12	FILTERS	D239	10
13	COUPLING	E261	11
14	SOLDERING	E273	11
15	RELAYS	E295	12
16	MICROPHONES	F314	12
17	SPEAKERS	F327	13
18	OSCILLOSCOPES	F342	13
19	SEMICONDUCTOR DIODES	G354	13
20	TRANSISTORS	G404	15
21	TRANSISTOR AMPLIFIERS	G428	16
22	SOLID-STATE SPECIAL PURPOSE DEVICES	H477	19
23	POWER SUPPLIES	H483	19
24	OSCILLATORS	H512	19
25	MULTIVIBRATORS	I539	20
26	LIMITERS AND CLAMPERS	I555	21
27	ELECTRON TUBES	I565	21
28	ELECTRON TUBE AMPLIFIERS AND CIRCUITS	J609	22
29	SPECIAL PURPOSE ELECTRON TUBES	J616	23
30	HETERODYNING, MODULATION, AND DEMODULATION	J632	23
31	AM SYSTEMS	K638	23
32	FM SYSTEMS	K666	24

TABLE 1 (CONTINUED)

EPI SUBJECT AREAS

<u>SEQUENCE OF SUBJECT AREAS</u>	<u>SUBJECT AREA TITLE</u>	<u>BEGINNING ITEM NUMBER</u>	<u>GPSUM PAGE NUMBER</u>
33	NUMBERING SYSTEMS	K685	25
34	LOGIC FUNCTIONS	L695	25
35	BOOLEAN EQUATIONS	L708	26
36	COUNTERS	L733	27
37	TIMING CIRCUITS	M757	27
38	USE OF SIGNAL GENERATORS	M769	28
39	MOTORS AND GENERATORS	M779	28
40	METER MOVEMENTS	N808	29
41	SATURABLE REACTORS AND MAGNETIC AMPLIFIERS	N818	29
42	WAVESHAPING CIRCUITS	N834	30
43	SINGLE SIDEBAND SYSTEMS	O845	30
44	PULSE MODULATION SYSTEMS	O875	31
45	ANTENNAS	O914	32
46	TRANSMISSION LINES	P953	34
47	WAVEGUIDES AND CAVITY RESONATORS	P984	35
48	MICROWAVE AMPLIFIERS AND OSCILLATORS	P1034	37
49	REGISTERS	Q1110	39
50	STORAGE DEVICES	Q1117	40
51	DIGITAL TO ANALOG CONVERTERS	Q1126	40
52	PHANTASTRONS	Q1140	41
53	SCHMITT TRIGGERS	R1141	41
54	CABLE FABRICATION	R1144	41
55	INPUT/OUTPUT DEVICES	S1146	41
56	PHOTO SENSITIVE DEVICES	S1149	41
57	SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)	S1150	41
58	INFRARED	T1159	41
59	LASERS	T1186	42
60	DISPLAY TUBES	T1220	43
61	PROGRAMMING	U1234	43
62	DB AND POWER RATIOS	U1255	44

TABLE 2
COMMAND REPRESENTATION OF SURVEY SAMPLE

COMMAND	32854	
	PERCENT ASSIGNED	PERCENT OF SAMPLE
ADCOM	1	2
ATC	2	1
MAC	29	31
SAC	18	20
AFSC	2	1
TAC	27	24
USAFE	13	13
PACAF	7	7
OTHER	1	1
TOTAL	100	100

Total Assigned - 1150
Total Sampled - 220
Percent Sampled - 19%

PRESENTATION OF RESULTS

Personnel responded "yes" or "no" to the 1,257 electronic principles questions as related to their present job. A Group Summary (GPSUM) computer printout is provided in the Appendix portion of this report. Page 1 of the GPSUM lists the seven selected groups identified for this report. Pages 2-44 show the percentage of the incumbents responding to the EPI items. The computer program results display the percent members answering "yes" to the subject area questions. The reader can locate a specific subject area by referring to the Appendix page number as listed in Table 1. For example, the Transformers area results are given on page 6 of the GPSUM. The percentage of survey respondents indicating use of specific electronic principles ranged from high in areas such as Oscilloscopes (p. 13) and Power Supplies (p. 19) to low in areas such as Microphones (p. 12) and Speakers (p. 13). Additional AFSC 328X4 data can be obtained upon request to the Chief, Occupational Survey Branch (OMY).

APPENDIX

PCT MBRs RESPONDING 'YES' BY SELECTED GRPS

GPSUN9 PAGE 1

TABULATION OF ELECTRONIC PRINCIPLES UTILIZATION DATA FOR SELECTED GROUPS
IN THE 32854 CAREER FIELD.

REPORTS ON THE FOLLOWING GROUPS WERE REQUESTED

GROUP IDENTITY =	SPC176	ALL	AIRMAN	DAFSC	32854	CONTAINING	220 MEMBERS.
GROUP IDENTITY =	SPC177	ALL	AIRMAN	DAFSC	32854	CONTAINING	146 MEMBERS.
GROUP IDENTITY =	SPC178	ALL	AIRMAN	DAFSC	32854	CONTAINING	74 MEMBERS.
GROUP IDENTITY =	SPC179	ALL	AIRMAN	DAFSC	32854	CONTAINING	68 MEMBERS.
GROUP IDENTITY =	SPC180	ALL	AIRMAN	DAFSC	32854	CONTAINING	44 MEMBERS.
GROUP IDENTITY =	SPC181	ALL	AIRMAN	DAFSC	32854	CONTAINING	54 MEMBERS.
GROUP IDENTITY =	SPC182	ALL	AIRMAN	DAFSC	32854	CONTAINING	30 MEMBERS.

STATIONED IN CONUS
STATIONED OVERSEAS
ASSIGNED TO MAC
ASSIGNED TO SAC
ASSIGNED TO TAC
ASSIGNED TO USAFE

Author's Note

DY-TSK

SY-TSK	DO YOU USE OR REFER TO THE TERM EFFECTIVE VOLTAGE (RMS).	DO YOU USE OR REFER TO THE TERM PEAK TO PEAK VOLTAGE.	DO YOU USE OR REFER TO THE TERM AVERAGE VOLTAGE (DC).	DO YOU USE OR REFER TO THE TERM WAVE LENGTH.	DO YOU USE OR REFER TO THE TERM FREQUENCY.	DO YOU USE OR REFER TO THE TERM INSTANTANEOUS VALUE.	DO YOU WORK WITH INDUCTORS OR CIRCUITS CONTAINING INDUCTORS, CHOKES, OR CHOKO COILS IN YOUR PRESENT JOB.	DO YOU INSPECT INDUCTORS.	DO YOU CLEAN INDUCTORS.	DO YOU ADJUST INDUCTORS.	DO YOU REMOVE OR REPLACE INDUCTORS.	DO YOU USE OR REFER TO INDUCTANCE.	DO YOU REFER TO HENRIES.	DO YOU USE OR REFER TO INDUCTIVE REACTANCE.	DO YOU USE OR REFER TO COPPER LOSS IN INDUCTORS.	DO YOU USE OR REFER TO HYSTERESIS LOSS IN INDUCTORS.	DO YOU USE OR REFER TO EDDY CURRENT LOSS IN INDUCTORS.	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTANCE IS PROPORTIONAL TO THE SQUARE OF THE NUMBER OF TURNS OF THE COIL.	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE CROSS SECTIONAL AREA OF THE CORE.	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS INVERSELY PROPORTIONAL TO ITS LENGTH.	DO YOU USE OR REFER TO THE GENERAL RULE THAT THE INDUCTANCE OF A COIL IS DIRECTLY PROPORTIONAL TO THE PERMEABILITY OF THE CORE MATERIAL.	DO YOU CALCULATE INDUCTANCE FOR PARTICULAR INDUCTORS USING FORMULAS.	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTANCE IN SERIES.	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN PARALLEL.	DO YOU CALCULATE THE TOTAL INDUCTANCE FOR INDUCTORS IN SERIES-PARALLEL CIRCUITS.	DO YOU USE OR REFER TO THE GENERAL RULE THAT CURRENT LAGS VOLTAGE IN AC INDUCTOR CIRCUITS.	DO YOU CALCULATE INDUCTIVE REACTANCE.	DO YOU USE OR REFER TO THE GENERAL RULE THAT INDUCTIVE REACTANCE IS DIRECTLY PROPORTIONAL TO FREQUENCY.	DO YOU WORK WITH POWER INDUCTORS.	DO YOU WORK WITH AUDIO FREQUENCY INDUCTORS.	DO YOU WORK WITH RADIO FREQUENCY INDUCTORS.	
61	82-01	71	71	70	84	77	57	47																								
62	82-02	88	89	85	94	93	81	70																								
63	82-03	73	76	68	82	77	67	53																								
64	82-04	67	72	58	81	86	54	30																								
65	82-05	94	94	93	96	100	91	83																								
66	82-06	28	27	30	26	34	24	20																								
67	83-01	59	55	46	62	77	43	37																								
68	83-02	57	54	42	65	82	33	27																								
69	83-03	41	39	45	54	52	17	17																								
70	83-04	44	42	47	50	80	17	20																								
71	83-05	51	49	57	42	72	23	23																								
72	83-06	44	41	49	53	70	19	20																								
73	83-07	30	30	28	38	45	13	13																								
74	83-08	30	29	31	34	43	11	17																								
75	83-09	5	4	1	4	7	2	0																								
76	83-10	9	10	7	10	11	4	3																								
77	83-11	6	8	3	9	5	4	0																								
78	83-12	6	8	3	12	7	2	0																								
79	83-13	4	5	0	4	7	2	0																								
80	83-14	4	5	0	4	5	4	0																								
81	83-15	4	5	1	6	7	2	0																								
82	83-16	6	8	3	7	9	6	0																								
83	83-17	6	8	1	7	9	4	0																								
84	83-18	5	8	1	7	7	4	0																								
85	83-19	6	8	1	7	9	4	0																								
86	83-20	15	18	9	22	16	9	3																								
87	83-21	8	10	4	10	11	4	0																								
88	83-22	16	17	14	22	23	7	3																								
89	83-23	32	32	32	38	36	28	20																								
90	83-24	31	33	28	44	55	11	0																								
91	83-25	33	34	31	44	46	15	1																								

0Y-75K

QUESTIONS DO YOU WANT TO LIVE AND SEARCH IN YOUR PRESENT JOB

C 130 C2-03 DO YOU CLEAN TRANSFORMERS

2 132 C2-03 00 YOU KNOWCSHOUT TRANSFORMERS
2 133 C2-04 00 YOU REMOVE OR REPLACE COMPLTF

THE PRIMARY WINDING

C 136 C2-09 DO YOU USE THE SYMBOL FOR MUTUAL INDUCTANCE. H

WOMEN WORKING WITH TRANSFORMERS

C 139 C2-12 DO YOU REFER TO REFLECTED IMPEDANCE WHEN WORKING WITH

C 140 CZ-13 DO YOU CALCULATE IMPEDANCE INTERACTIONS FOR

142 C2-15 DO YOU WORK WITH POWER TRANSFORMERS

C 144 C2-17 00 V8U WORK WITH RADIO FREQUENCY TRA

C 146 C2-19 DO YOU CHECK TRANSFORMERS FOR OPEN WINDINGS B

C 147 C2-20 DO YOU CHECK TRANSFORMERS FOR SHORTED WINDINGS BY
MEASURING RESISTANCE

MEASURING OUTPUT VOLTAGES

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR
STEP-DOWN RATIO

DETERMINE WHETHER A TRANSFORMER HAS A STEP-UP OR STEP-

C 191 62-24 00 100 REFER TO BASIC TRANSFORMER SCHEMATIC SYMBOL FOR TRANSDUCERS

TRANSFORMERS

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUM9 PAGE 7

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
C 152 C2-25 DO YOU REFER TO MULTIPLE SECONDARY-WINDINGS SCHEMATIC SYMBOLS FOR TRANSFORMERS	176	177	178	179	180	181	182		
C 153 C2-26 DO YOU REFER TO MULTIPLE TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	63	64	65	82	54	40		
C 154 C2-27 DO YOU REFER TO CENTER TAP SCHEMATIC SYMBOLS FOR TRANSFORMERS	63	63	62	65	80	54	37		
C 155 C2-28 DO YOU REFER TO AIR CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	66	65	68	66	82	52	47		
C 156 C2-29 DO YOU REFER TO IRON CORE SCHEMATIC SYMBOLS FOR TRANSFORMERS	29	33	22	31	45	26	10		
C 157 C2-30 DO YOU REFER TO COMBINATIONS OF THE ABOVE SCHEMATIC SYMBOLS FOR TRANSFORMERS	39	41	34	38	61	28	20		
C 158 C2-31 DO YOU DETERMINE PHASE RELATIONSHIPS BETWEEN SECONDARY AND PRIMARY VOLTAGES OF TRANSFORMERS USING SCHEMATIC SYMBOLS	55	53	57	54	70	44	30		
C 159 C2-32 DO YOU DETERMINE OR REFER TO THE TYPE OF CORE IN TRANSFORMERS YOU WORK WITH	28	29	26	32	32	19	13		
C 160 C2-33 DO YOU REFER TO OR USE THE GENERAL RULE THAT THE TURNS RATIO OF A TRANSFORMER IS EQUAL TO THE VOLTAGE RATIO	15	18	8	21	16	17	0		
C 161 C2-34 DO YOU USE OR REFER TO STEP-UP OR STEP-DOWN RATIOS FOR TRANSFORMERS	15	17	11	19	16	11	10		
C 162 C2-35 DO YOU CALCULATE VOLTAGE RATIOS FOR TRANSFORMERS USING TURNS RATIOS	25	26	24	31	25	22	17		
C 163 C2-36 DO YOU CALCULATE CURRENT RATIOS FOR TRANSFORMERS USING TURNS RATIOS	8	10	4	10	7	4	7		
C 164 C2-37 DOES YOUR JOB INVOLVE ANY TASKS DEALING WITH THREE PHASE TRANSFORMERS	6	9	0	9	7	4	3		
C 165 C2-38 DO YOU INSPECT THREE PHASE TRANSFORMERS	38	36	42	37	39	37	27		
C 166 C2-39 DO YOU CLEAN OR LUBRICATE THREE PHASE TRANSFORMERS	37	34	43	37	45	30	20		
C 167 C2-40 DO YOU ADJUST THREE PHASE TRANSFORMERS	25	26	22	26	30	19	13		
C 168 C2-41 DO YOU TROUBLESHOOT THREE PHASE TRANSFORMERS	15	16	14	18	18	11	7		
C 169 C2-42 DO YOU REMOVE OR REPLACE COMPLETE THREE PHASE TRANSFORMERS	29	26	34	29	39	19	17		
C 170 C2-43 DO YOU REMOVE OR REPLACE THREE PHASE TRANSFORMER PARTS SUCH AS BINDINGS	33	29	39	37	45	19	17		
C 171 C3-01 DO YOU USE OR REFER TO PERMANENT MAGNETS	4	5	0	6	2	6	0		
C 172 C3-02 DO YOU USE OR REFER TO TEMPORARY MAGNETS	41	44	35	50	55	30	7		
C 173 C3-03 DO YOU USE OR REFER TO RETENTIVITY OF MAGNETIC MATERIALS	25	25	26	34	16	20	13		
C 174 C3-04 DO YOU USE OR REFER TO RELUCTANCE OF MAGNETIC MATERIALS	12	14	7	18	11	6	7		
C 175 C3-05 DO YOU USE OR REFER TO PERMEABILITY OF MAGNETIC MATERIALS	10	12	5	15	5	6	7		
C 176 C3-06 DO YOU USE OR REFER TO RESIDUAL MAGNETISM FLUX	10	12	5	15	7	7	3		
C 177 C3-07 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	26	26	26	26	16	24	27		
C 178 C3-08 DO YOU USE OR REFER TO WEBER'S THEORY OF MAGNETISM	4	5	1	10	0	4	0		

MAGNETISM

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

GPSUM PAGE 8

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

SPC SPC SPC SPC SPC SPC SPC SPC
176 177 178 179 180 181 182

C 179 C3-09 DO YOU USE OR REFER TO DOMAIN THEORY OF MAGNETISM
C 180 C3-10 DO YOU USE OR REFER TO MAGNETIC INDUCTION
C 181 C3-11 DO YOU USE OR REFER TO FLUX DENSITY
C 182 C3-12 DO YOU USE OR REFER TO THE GENERAL RULE THAT FOR
MAGNETIC POLES, LIKE POLES REPEL AND UNLIKE POLES ATTRACT
C 183 C3-13 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE
DIRECTION OF MAGNETIC FIELDS ABOUT STRAIGHT WIRES
C 184 C3-14 DO YOU USE THE LEFT HAND THUMB RULE TO FIND THE NORTH
POLE OF A CURRENT CARRYING COIL
D 185 D1-01 DO YOU WORK WITH RCL, LR, RCL CIRCUITS IN YOUR
PRESENT JOB
D 186 D1-02 DO YOU USE OR REFER TO VECTORS WHEN WORKING WITH RCL
CIRCUITS
D 187 D1-03 DO YOU USE OR REFER TO PYTHAGOREAN THEOREM WHEN
WORKING WITH RCL CIRCUITS
D 188 D1-04 DO YOU USE OR REFER TO SINE WHEN WORKING WITH RCL
CIRCUITS
D 189 D1-05 DO YOU USE OR REFER TO COSINE WHEN WORKING WITH RCL
CIRCUITS
D 190 D1-06 DO YOU USE OR REFER TO TANGENT WHEN WORKING WITH RCL
CIRCUITS
D 191 D1-07 DO YOU USE OR REFER TO WATTS WHEN WORKING WITH RCL
CIRCUITS
D 192 D1-08 DO YOU USE OR REFER TO TRUE POWER (PT) WHEN WORKING
WITH RCL CIRCUITS
D 193 D1-09 DO YOU USE OR REFER TO MAXIMUM POWER (PM) WHEN
WORKING WITH RCL CIRCUITS
D 194 D1-10 DO YOU USE OR REFER TO AVERAGE POWER (PAVE) WHEN
WORKING WITH RCL CIRCUITS
D 195 D1-11 DO YOU USE OR REFER TO APPARENT POWER (PA) WHEN
WORKING WITH RCL CIRCUITS
D 196 D1-12 DO YOU USE OR REFER TO POWER FACTOR (PF) WHEN WORKING
WITH RCL CIRCUITS
D 197 D1-13 DO YOU USE OR REFER TO RESONANT CIRCUITS WHEN
WORKING WITH RCL CIRCUITS
D 198 D1-14 DO YOU USE OR REFER TO BANDWIDTH WHEN WORKING WITH
RCL CIRCUITS
D 199 D1-15 DO YOU USE OR REFER TO SELECTIVITY WHEN WORKING WITH
RCL CIRCUITS
D 200 D1-16 DO YOU USE OR REFER TO RESONANT FREQUENCY WHEN
WORKING WITH RCL CIRCUITS
D 201 D1-17 DO YOU USE OR REFER TO HALF POWER POINTS WHEN
WORKING WITH RCL CIRCUITS
D 202 D1-18 DO YOU USE OR REFER TO BANDPASS REGION WHEN WORKING
WITH RCL CIRCUITS
D 203 D1-19 DO YOU USE OR REFER TO CIRCUIT Q WHEN WORKING WITH
RCL CIRCUITS

RCL CIRCUITS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

UY-TSK

[illegible]

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

07-75K

[illegible]

PCT MURS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

SPSUM9 PAGE 13

DY-TSK

F 327	F2-01	IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 328	F2-02	DO YOU INSPECT SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 329	F2-03	DO YOU CLEAN SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 330	F2-04	DO YOU OPERATE SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 331	F2-05	DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS BUT DO NOT TROUBLESHOOT DOWN TO COMPONENT PARTS OF SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 332	F2-06	DO YOU TROUBLESHOOT DOWN TO SPEAKER PARTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 333	F2-07	DO YOU REMOVE OR REPLACE COMPLETE SPEAKERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 334	F2-08	DO YOU REMOVE OR REPLACE SPEAKER PARTS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 335	F2-09	DO YOU PERFORM ANY TASKS ON SPEAKER CONES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 336	F2-10	DO YOU PERFORM ANY TASKS ON SPEAKER SPIDERS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 337	F2-11	DO YOU PERFORM ANY TASKS ON SPEAKER FIELD COILS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 338	F2-12	DO YOU PERFORM ANY TASKS ON SPEAKER VOICE COILS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 339	F2-13	DO YOU PERFORM ANY TASKS ON SPEAKER PERMANENT MAGNETS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 340	F2-14	DO YOU PERFORM ANY TASKS ON SPEAKER ELECTROMAGNETS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 341	F2-15	DO YOU PERFORM ANY TASKS ON SPEAKER SOFT IRON CORES	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
F 342	F3-01	DO YOU USE OSCILLOSCOPES IN YOUR PRESENT JOB	93	93	93	87	98	94	97																				
F 343	F3-02	DO YOU USE OSCILLOSCOPES TO PERFORM OPERATIONAL CHECKS	89	90	86	90	98	87	77																				
F 344	F3-03	DO YOU USE OSCILLOSCOPES TO PERFORM ALIGNMENTS OR ADJUSTMENTS	88	90	84	84	98	89	73																				
F 345	F3-04	DO YOU USE OSCILLOSCOPES TO TROUBLESHOOT ELECTRONIC CIRCUITS	88	90	85	87	95	89	77																				
F 346	F3-05	DO YOU USE OSCILLOSCOPES TO MEASURE FREQUENCY	89	85	81	87	100	74	67																				
F 347	F3-06	DO YOU USE OSCILLOSCOPES TO MEASURE TIME	75	79	68	84	100	63	33																				
F 348	F3-07	DO YOU USE OSCILLOSCOPES TO OBSERVE LISAJOUS PATTERNS	42	47	32	43	73	30	17																				
F 349	F3-08	DO YOU USE OSCILLOSCOPES TO OBSERVE SIGNALS WHILE UTILIZING ATTENUATOR PROBES	70	74	64	84	98	54	27																				
F 350	F3-09	DO YOU USE OSCILLOSCOPES TO MAKE FREQUENCY OR TIME MEASUREMENTS USING DELAY TIME MULTIPLIERS	44	48	36	62	57	31	7																				
F 351	F3-10	DO YOU USE OSCILLOSCOPES TO MEASURE AC VOLTAGE	87	88	85	84	98	80	87																				
F 352	F3-11	DO YOU USE OSCILLOSCOPES TO MEASURE OR OBSERVE SIGNALS AFTER FIRST ADJUSTING THE GAIN AND DC BAL CONTROLS	61	64	57	69	77	48	40																				
F 353	F3-12	DO YOU USE OSCILLOSCOPES TO MEASURE DC VOLTAGE	84	85	82	88	98	72	73																				
G 354	G1-01	DO YOU WORK WITH SEMICONDUCTOR DIODES IN YOUR PRESENT JOB	76	75	77	81	82	69	63																				
G 355	G1-02	DO YOU INSPECT DIODES	74	73	74	79	86	63	57																				
G 356	G1-03	DO YOU REMOVE OR REPLACE DIODES	68	67	70	82	82	50	40																				
G 357	G1-04	DO YOU CHECK DIODES USING AN INSTRUMENT	69	67	73	78	84	52	50																				
G 358	G1-05	DO YOU USE ENERGY LEVEL DIAGRAMS IN YOUR WORK WITH DIODES	5	8	1	7	7	6	0																				
G 359	G1-06	DO YOU USE PN JUNCTION DIODE CHARACTERISTIC CURVES, TOGETHER WITH VALUES OF FORWARD AND REVERSE BIAS VOLTAGE, TO COMPUTE FORWARD OR REVERSE LIAS RESISTANCE	6	9	1	12	2	6	0																				
G 360	G1-07	DO YOU COMPUTE FORWARD OR REVERSE BIAS RESISTANCE FOR DIODES	12	14	8	15	14	11	3																				

OSCILLOSCOPES

SEMICONDUCTOR DIODES

0Y-7SK

[illegible]

PCT HRS RESPONDING 'YES' BY SELECTED GRPS

GPSUM9 PAGE 15

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DT-TSK

	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
	176	177	178	179	180	181	182		
6 383 61-30 DO YOU USE OR REFER TO FORBIDDEN BAND IN SEMICONDUCTOR MATERIALS	1	2	0	4	0	0	0		
6 384 61-31 DO YOU USE OR REFER TO CONDUCTION BAND IN SEMICONDUCTOR MATERIALS	2	3	0	4	5	0	0		
6 385 61-32 DO YOU USE OR REFER TO COVALENT BONDING IN SEMICONDUCTOR MATERIALS	1	2	0	4	0	0	0		
6 386 61-33 DO YOU USE OR REFER TO ELECTRON-HOLE PAIR CREATED IN SEMICONDUCTORS	2	3	1	7	0	0	0		
6 387 61-34 DO YOU USE OR REFER TO ELECTRON FLOW OR HOLE FLOW IN SEMICONDUCTORS	7	7	8	12	11	0	3		
6 388 61-35 DO YOU USE OR REFER TO DONOR IMPURITY IN SEMICONDUCTORS	2	3	0	6	2	0	0		
6 389 61-36 DO YOU USE OR REFER TO ACCEPTOR IMPURITY IN SEMICONDUCTORS	2	3	0	4	0	0	0		
6 390 61-37 DO YOU USE OR REFER TO P-TYPE SEMICONDUCTOR MATERIAL	14	14	19	25	11	9	0		
6 391 61-38 DO YOU USE OR REFER TO N-TYPE SEMICONDUCTOR MATERIAL	15	14	18	25	11	9	0		
6 392 61-39 DO YOU USE OR REFER TO MAJORITY CARRIERS IN SEMICONDUCTORS	4	5	1	7	2	2	0		
6 393 61-40 DO YOU USE OR REFER TO MINORITY CARRIERS IN SEMICONDUCTORS	4	5	1	7	2	2	0		
6 394 61-41 DO YOU USE OR REFER TO JUNCTION RECOMBINATION IN SEMICONDUCTORS	2	3	0	7	0	0	0		
6 395 61-42 DO YOU USE OR REFER TO DEPLETION REGION IN SEMICONDUCTORS	2	3	0	6	0	0	0		
6 396 61-43 DO YOU USE OR REFER TO RELATIONSHIP BETWEEN BARRIER WIDTH AND DIFFERENCE OF POTENTIAL	2	2	1	6	0	0	0		
6 397 61-44 DO YOU USE OR REFER TO THE 10:1 BACK TO FRONT RESISTANCE RATIO FOR DIODES	35	34	36	46	41	24	17		
6 398 61-45 DO YOU USE OR REFER TO BARRIER HEIGHT IN SEMICONDUCTORS	0	1	0	1	0	0	0		
6 399 61-46 DO YOU USE OR REFER TO DIODE SUBSTITUTION INFORMATION	24	22	27	29	23	20	3		
6 400 61-47 DO YOU USE OR REFER TO MAXIMUM AVERAGE FORWARD CURRENT DIODE RATINGS	9	10	5	12	9	7	0		
6 401 61-48 DO YOU USE OR REFER TO PEAK RECURRENT FORWARD CURRENT DIODE RATINGS	10	12	7	13	11	9	0		
6 402 61-49 DO YOU USE OR REFER TO MAXIMUM SURGE CURRENT DIODE RATINGS	9	11	5	12	11	6	0		
6 403 61-50 DO YOU USE OR REFER TO PEAK REVERSE (INVERSE) VOLTAGE DIODE RATINGS	12	12	12	19	14	6	0		
6 404 62-01 DO YOU WORK WITH TRANSISTORS IN YOUR PRESENT JOB.	74	73	74	75	70	72	63		
6 405 62-02 DO YOU INSPECT TRANSISTORS	49	48	70	75	66	67	50		
6 406 62-03 DO YOU REMOVE OR REPLACE TRANSISTORS	63	60	69	76	52	52	47		
6 407 62-04 DO YOU CHECK TRANSISTORS USING AN INSTRUMENT	57	53	65	72	41	50	40		
6 408 62-05 DO YOU USE OR REFER TO EMITTER - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	49	44	58	66	39	41	20		TRANSISTORS
6 409 62-06 DO YOU USE OR REFER TO COLLECTOR - BASE (CB) FORWARD AND REVERSE RESISTANCE MEASUREMENTS	48	43	58	63	39	43	20		

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-YSK

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	SPC 180	SPC 181	SPC 182
G 410	62-07 DO YOU USE OR REFER TO EMITTER - COLLECTOR (EC)	48	43	58	65	39	39	23
G 411	RESISTANCE MEASUREMENTS							
G 412	62-08 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE EMITTER - BASE JUNCTION	15	14	15	22	7	11	13
G 413	62-09 DO YOU USE OR REFER TO HOW BIASING AFFECTS THE PHYSICAL BARRIER WIDTH OF THE COLLECTOR - BASE JUNCTION	14	14	14	22	5	9	13
G 414	62-10 DO YOU USE OR REFER TO THE PHYSICAL SIZE OF THE TRANSISTOR STRUCTURE (COLLECTOR, BASE AND EMITTER)	33	29	39	46	23	20	33
G 415	62-11 DO YOU USE OR REFER TO LEAKAGE CURRENT (ICBO) IN A TRANSISTOR	12	13	11	24	7	9	3
G 416	62-12 DO YOU USE OR REFER TO TRANSISTOR SCHEMATIC SYMBOLS	68	67	70	74	59	69	53
G 417	62-13 DO YOU USE OR REFER TO TRANSISTOR NOTATION SUCH AS Q1, Q2, Q3, ETC	69	66	74	75	55	69	60
G 418	62-14 DO YOU USE OR REFER TO TRANSISTOR SUBSTITUTION INFORMATION	30	29	32	41	18	30	7
G 419	62-15 DO YOU USE OR REFER TO THE GENERAL RULE THAT THE TRANSISTOR BASE CURRENT IB IS NORMALLY SIGNIFICANTLY SMALLER THAN THE EMITTER CURRENT IE (USUALLY IB BEING 2 TO 8 PERCENT OF IE)	17	16	18	26	14	15	10
G 420	62-16 DO YOU USE THE INFORMATION THAT THE EFFECT OF EMITTER BASE VOLTAGE ON BASE CURRENT IS THE CONTROLLING FACTOR FOR TRANSISTORS	24	23	26	34	18	22	10
G 421	62-17 DO YOU USE THE GENERAL RULE THAT LEAKAGE CURRENT (ICBO) IN A TRANSISTOR INCREASES AS TEMPERATURE INCREASES	10	12	7	16	5	9	3
G 422	62-18 DO YOU USE OR REFER TO TRANSISTOR CHARACTERISTIC CURVES	3	4	1	7	0	4	0
G 423	62-19 DO YOU USE OR REFER TO BETA TRANSISTOR GAINS	9	8	11	19	2	6	0
G 424	62-20 DO YOU USE OR REFER TO ALPHA TRANSISTOR GAINS	8	8	9	18	2	6	0
G 425	62-21 DO YOU USE OR REFER TO GAMMA TRANSISTOR GAINS	7	7	8	15	2	6	0
G 426	62-22 DO YOU CALCULATE BETA TRANSISTOR GAINS	2	3	0	4	0	2	0
G 427	62-23 DO YOU CALCULATE ALPHA TRANSISTOR GAINS	2	3	0	4	0	2	0
G 428	62-24 DO YOU CALCULATE GAMMA TRANSISTOR GAINS	2	3	0	3	0	2	0
G 429	63-01 DO YOU WORK WITH TRANSISTOR AMPLIFIERS IN YOUR PRESENT JOB	55	51	61	72	41	46	37
G 430	63-02 DO YOU INSPECT TRANSISTOR AMPLIFIERS	52	47	62	71	39	37	40
G 431	63-03 DO YOU ALIGN OR ADJUST TRANSISTOR AMPLIFIERS	33	29	41	46	23	22	20
G 432	63-04 DO YOU TROUBLESHOOT TO THE AMPLIFIER CIRCUIT LEVEL	47	41	59	63	34	35	37
G 433	63-05 DO YOU TROUBLESHOOT TO AMPLIFIER COMPONENTS	37	32	49	62	20	19	17
G 434	63-06 DO YOU REMOVE OR REPLACE THE COMPLETE AMPLIFIER	51	48	57	72	39	37	37
G 435	63-07 DO YOU REMOVE OR REPLACE AMPLIFIER COMPONENTS	38	32	51	62	20	20	20
G 436	63-08 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A CHANGE IN BASE CURRENT	15	14	16	24	7	15	0
G 437	63-09 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR CURRENT WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	7	8	5	12	2	6	0

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUM9 PAGE 17

0Y-TSK

	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
	176	177	178	179	180	181	182		
6 437 63-10 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A CHANGE IN BASE CURRENT	16	15	18	25	7	15	0		
6 438 63-11 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN COLLECTOR VOLTAGE WHICH RESULTS FROM A SPECIFIC CHANGE IN BASE CURRENT	6	6	5	10	2	4	0		
6 439 63-12 DO YOU USE OR REFER TO (COMMON EMITTER) THE CHANGE IN BASE CURRENT WHICH RESULTS FROM AN INPUT SIGNAL	15	14	16	24	7	13	3		
6 440 63-13 DO YOU USE OR REFER TO (COMMON EMITTER) THE CALCULATIONS NECESSARY TO MEASURE THE SPECIFIC CHANGE IN BASE CURRENT WHICH RESULTS FROM A SPECIFIC INPUT SIGNAL	7	8	5	12	2	4	0		
6 441 63-14 DO YOU USE THE LOAD-LINE METHOD OF ANALYSIS IN YOUR CIRCUIT ANALYSIS (THIS METHOD REQUIRES YOU TO PLOT A LOAD-LINE ON A TRANSISTOR CHARACTERISTIC CURVE)	3	3	3	7	0	0	0		
6 442 63-15 DO YOU USE OR REFER TO THE OPERATING POINT Q (QUIESCENT POINT) FOR A TRANSISTOR	7	5	11	13	2	2	3		
6 443 63-16 DO YOU CALCULATE THE SPECIFIC QUIESCENT POINT FOR A PARTICULAR TRANSISTOR	3	3	3	6	0	4	0		
6 444 63-17 DO YOU MEASURE VOLTAGE GAIN USED IN THE COMMON EMITTER CONFIGURATION	24	21	31	35	14	19	17		
6 445 63-18 DO YOU MEASURE CURRENT GAIN USED IN THE COMMON EMITTER CONFIGURATION	17	16	18	31	9	9	7		
6 446 63-19 DO YOU MEASURE POWER GAIN USED IN THE COMMON EMITTER CONFIGURATION	15	14	18	31	9	4	3		
6 447 63-20 DO YOU CALCULATE THE VOLTAGE GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE-EMITTER VOLTAGE INTO THE CHANGE THE BASE COLLECTOR VOLTAGE TO DETERMINE THE VOLTAGE GAIN	4	4	4	9	0	2	0		
6 448 63-21 DO YOU CALCULATE THE CURRENT GAIN FOR SPECIFIC TRANSISTORS USING A FORMULA THAT IS, DO YOU DIVIDE THE CHANGE IN BASE CURRENT INTO THE CHANGE IN COLLECTOR CURRENT TO DETERMINE THE CURRENT GAIN	4	4	3	7	0	2	0		
6 449 63-22 DO YOU CALCULATE THE POWER GAIN FOR A SPECIFIC TRANSISTOR USING A FORMULA THAT IS, DO YOU MULTIPLY THE CURRENT GAIN TIMES THE VOLTAGE GAIN TO DETERMINE THE POWER GAIN	3	3	1	6	0	2	0		
6 450 63-23 DO YOU NEED TO KNOW THAT MORE COLLECTOR CURRENT IS GENERATED WITH LESS COLLECTOR VOLTAGE AS TEMPERATURE INCREASES (THIS AFFECTS THE STATIC OPERATING POINT Q) OF THE TRANSISTOR)	5	5	4	6	2	4	0		
6 451 63-24 DO YOU COMPUTE THE STATIC OPERATING POINT Q) OF A TRANSISTOR AT DIFFERENT TEMPERATURES	1	2	0	3	0	2	0		
6 452 63-25 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH EMITTER (SWAMPING) RESISTOR STABILIZATION	17	18	16	28	11	11	0		
6 453 63-26 DO YOU IDENTIFY ON SCHEMATIC DIAGRAMS AND RELATE TO THE ACTUAL CIRCUITRY THE COMPONENTS ASSOCIATED WITH SELF-BIAS STABILIZATION	15	15	16	25	11	7	0		

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-73K

[illegible]

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-75K

[illegible]

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUN9 PAGE 22

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC SPC SPC

1 586 13-22 DO YOU CALCULATE ACTUAL VALUES OF TRIODE
APPLICATION FACTORS
1 587 13-23 DO YOU USE OR REFER TO MULTIGRID (TETRODE, PENTODE,
ETC) AMPLIFICATION FACTORS
1 588 13-24 DO YOU USE OR REFER TO ELECTRON TUBE TRANSCONDUCTANCE
(μ), WHICH IS MEASURED IN MMOS,
1 589 13-25 DO YOU CALCULATE ACTUAL VALUES OF ELECTRON TUBE
TRANSCONDUCTANCES
1 590 13-26 DO YOU USE OR REFER TO THE ELECTRON TUBE PARAMETER
CALLED AC PLATE RESISTANCE
1 591 13-27 DO YOU CALCULATE ACTUAL VALUES OF AC PLATE
RESISTANCE
1 592 13-28 DO YOU USE OR REFER TO ELECTRON TUBE INTERELECTRODE
CAPACITANCE
1 593 13-29 DO YOU USE OR REFER TO CHARACTERISTIC CURVES IN YOUR
WORK WITH ELECTRON TUBES
1 594 13-30 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
VOLTAGE FOR A SPECIFIED BIAS
1 595 13-31 DO YOU USE CHARACTERISTIC CURVES TO SELECT PLATE
CURRENT FOR A SPECIFIED BIAS
1 596 13-32 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR CUTOFF
1 597 13-33 DO YOU USE CHARACTERISTIC CURVES TO SELECT BIAS
REQUIRED FOR SATURATION
1 598 13-34 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER GAIN
1 599 13-35 DO YOU USE OR REFER TO ELECTRON TUBE AMPLIFIER
EFFICIENCY
1 600 13-36 DO YOU USE TEST TUBE CHECKERS TO DETERMINE ELECTRON
TUBE AMPLIFIER GAIN
1 601 13-37 DO YOU USE MULTIMETERS TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN
1 602 13-38 DO YOU USE OSCILLOSCOPES TO DETERMINE ELECTRON TUBE
AMPLIFIER GAIN
1 603 13-39 DO YOU USE CHARACTERISTIC CURVES TO DETERMINE
ELECTRON TUBE AMPLIFIER GAIN
1 604 13-40 DO YOU CALCULATE ANY ELECTRON TUBE CAPACITANCES SUCH
AS INPUT CAPACITANCE
1 605 13-41 DO YOU USE OR REFER TO TUBE SOCKET NOTATION
1 606 13-42 DO YOU USE OR REFER TO PIN NUMBERING SYSTEMS
1 607 13-43 DO YOU USE OR REFER TO THE TYPE OF MATERIAL OR THE
OPERATING TEMPERATURE OF THE EMITTING SURFACE IN THE
ELECTRON TUBES YOU WORK ON
1 608 13-44 DO YOU USE OR REFER TO TUBE SUBSTITUTION MATERIAL
SUCH AS MANUALS OR CHARTS
J 609 JI-01 DO YOU WORK WITH ELECTRON TUBE AMPLIFIERS OR CIRCUITS
IN YOUR PRESENT JOB
J 610 JI-02 DO YOU DETERMINE THE CLASS OF OPERATION FOR ELECTRON
TUBE AMPLIFIERS IN ORDER TO TROUBLESHOOT AMPLIFIER
CIRCUITS

ELECTRON TUBE
AMPLIFIERS
AND CIRCUITS

176 177 178 179 180 181 182
1 1 0 1 2 0 0
5 5 4 9 9 2 0
2 1 3 6 0 0 0
1 1 0 1 2 0 0
2 3 0 4 2 0 0
2 3 0 4 0 2 0
3 4 1 7 2 2 0
1 2 0 4 0 0 0
3 4 1 6 5 2 0
3 4 1 6 5 2 0
4 4 3 7 5 2 0
4 4 3 7 5 2 0
22 24 19 32 50 4 0
14 16 9 24 27 2 0
27 30 22 44 57 4 0
20 20 19 22 48 6 0
20 19 22 26 45 6 0
4 5 1 9 5 2 0
1 2 0 4 0 0 0
40 39 41 59 80 7 0
45 46 42 69 82 9 0
3 5 0 4 7 2 0
19 21 15 25 52 0 0
37 37 38 56 73 9 0
9 9 9 13 18 4 0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

[illegible]

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

GPSUHQ PAGE 25

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK																				
K 676 K2-11 DO YOU PERFORM TASKS ON DRIVERS (INTERMEDIATE AMPLIFIERS)										23	25	18	29	45	11	3				
K 677 K2-12 DO YOU PERFORM TASKS ON POWER AMPLIFIERS										23	25	18	32	43	9	3				
K 678 K2-13 DO YOU PERFORM TASKS ON RF AMPLIFIERS										22	25	18	29	45	11	3				
K 679 K2-14 DO YOU PERFORM TASKS ON FREQUENCY CONVERTERS										18	19	14	24	34	7	3				
K 680 K2-15 DO YOU PERFORM TASKS ON IF AMPLIFIERS										28	30	23	41	50	11	3				
K 681 K2-16 DO YOU PERFORM TASKS ON LIMITERS										19	21	15	25	34	7	3				
K 682 K2-17 DO YOU PERFORM TASKS ON FREQUENCY DISCRIMINATORS										17	20	12	22	36	7	3				
K 683 K2-18 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM TRANSMITTERS										24	25	23	34	48	9	3				
K 684 K2-19 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH SCHEMATIC DIAGRAMS OF FM RECEIVERS										26	27	23	40	50	7	3				
K 685 K3-01 DO YOU CONVERT DECIMAL (BASE 10) NUMBERS TO OCTAL (BASE 8) NUMBERS										23	22	24	40	27	6	3				
K 686 K3-02 DO YOU CONVERT DECIMAL NUMBERS TO BINARY (BASE 2) NUMBERS										26	25	30	49	30	11	3				
K 687 K3-03 DO YOU CONVERT OCTAL NUMBERS TO DECIMAL NUMBERS										21	21	22	41	23	6	0				
K 688 K3-04 DO YOU CONVERT OCTAL NUMBERS TO BINARY NUMBERS										21	21	22	41	23	6	0				
K 689 K3-05 DO YOU CONVERT BINARY NUMBERS TO DECIMAL NUMBERS										26	25	27	49	27	11	0				
K 690 K3-06 DO YOU CONVERT BINARY NUMBERS TO OCTAL NUMBERS										21	21	22	41	23	7	0				
K 691 K3-07 DO YOU ADD BINARY NUMBERS TO GET A SUM										23	24	20	38	25	15	0				
K 692 K3-08 DO YOU SUBTRACT BINARY NUMBERS USING THE END-AROUND-CARRY METHOD										16	16	12	28	18	9	0				
K 693 K3-09 DO YOU SUBTRACT BINARY NUMBERS USING THE DIRECT SUBTRACTION METHOD										20	21	18	35	23	9	0				
K 694 K3-10 DO YOU ADD OCTAL NUMBERS TO GET A SUM										18	19	15	32	23	4	0				
L 695 L1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS RELATING TO LOGIC FUNCTIONS										27	24	32	59	14	6	3				
L 696 L1-02 DO YOU CONSTRUCT TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES										8	9	5	18	2	2	0				
L 697 L1-03 DO YOU CONSTRUCT TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES										8	9	5	18	2	2	0				
L 698 L1-04 DO YOU CONSTRUCT TRUTH TABLES FOR AND OR LOGIC SYMBOLS WITH STATE INDICATORS										7	8	5	16	2	2	0				
L 699 L1-05 DO YOU CONSTRUCT TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS OR GATES										8	9	5	18	2	2	0				
L 700 L1-04 DO YOU USE OR REFER TO TRUTH TABLES FOR AND LOGIC SYMBOLS OR GATES										14	14	12	29	9	4	0				
L 701 L1-07 DO YOU USE OR REFER TO TRUTH TABLES FOR OR LOGIC SYMBOLS OR GATES										14	14	12	29	9	4	0				
L 702 L1-08 DO YOU USE OR REFER TO TRUTH TABLES FOR AND OR OR LOGIC SYMBOLS WITH STATE INDICATORS										13	14	12	28	9	4	0				
L 703 L1-09 DO YOU USE OR REFER TO TRUTH TABLES FOR EXCLUSIVE OR LOGIC SYMBOLS										14	15	12	31	9	4	0				
L 704 L1-10 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR AND GATES										23	21	28	54	9	4	0				
L 705 L1-11 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR OR GATES										23	20	28	53	9	4	0				
L 706 L1-12 DO YOU USE OR REFER TO LOGIC SYMBOLS FOR NAND OR NOR GATES										22	20	27	53	9	4	0				

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

[illegible]

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

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L 733 L3-01 DO YOU WORK WITH DIGITAL COUNTERS IN YOUR PRESENT JOB
L 734 L3-02 DO YOU USE OR REFER TO UP-COUNTERS
L 735 L3-03 DO YOU USE OR REFER TO DOWN-COUNTERS
L 736 L3-04 DO YOU USE OR REFER TO SERIAL COUNTERS
L 737 L3-05 DO YOU USE OR REFER TO PARALLEL COUNTERS
L 738 L3-06 DO YOU USE OR REFER TO RING COUNTERS
L 739 L3-07 DO YOU USE OR REFER TO DECADE COUNTERS
L 740 L3-08 DO YOU USE OR REFER TO COUNT DETECT CIRCUITS
L 741 L3-09 DO YOU USE OR REFER TO DOWN CLOCKS
L 742 L3-10 DO YOU USE OR REFER TO UP CLOCKS
L 743 L3-11 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS
L 744 L3-12 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENTING FLIP-
FLOPS
L 745 L3-13 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
DECADE COUNTERS
L 746 L3-14 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
RING COUNTERS
L 747 L3-15 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE REGISTER
L 748 L3-16 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
SHIFT REGISTERS
L 749 L3-17 DO YOU TRACE DATA FLOW THROUGH LOGIC DIAGRAMS OF
OTHER TYPE OF COUNTERS
L 750 L3-18 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT
PULSES FOR UP-COUNTERS HAVING COMPLEMENTED FLIP-FLOPS
L 751 L3-19 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT
PULSES FOR SERIAL UP- OR DOWN-COUNTERS HAVING COMPLEMENT-
ING FLIP-FLOPS
L 752 L3-20 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT
PULSES FOR SERIAL UP-COUNTERS FEEDING A PARALLEL STORAGE
REGISTERS
L 753 L3-21 DO YOU COMPUTE THE BINARY COUNT AFTER SPECIFIC INPUT
PULSES FOR OTHER TYPES OF COUNTERS
L 754 L3-22 DO YOU CONSTRUCT TRUTH TABLES FROM LOGIC DIAGRAMS OF
DECADE COUNTERS
L 755 L3-23 DO YOU DETERMINE THE STATE OF EACH FLIP-FLOP IN RING
COUNTERS FOR SPECIFIC INPUT PULSES
L 756 L3-24 DO YOU DETERMINE THE APPROPRIATE AND GATE NECESSARY
IN COUNT DETECT CIRCUITS TO INDICATE A REQUIRED COUNT
M 757 M1-01 DO YOU WORK WITH SAWTOOTH WAVE GENERATORS
M 758 M1-02 DO YOU WORK WITH TRAPEZOIDAL WAVE GENERATORS
M 759 M1-03 DO YOU WORK WITH PULSED OSCILLATORS WITH REGENERATIVE
FEEDBACK
M 760 M1-04 DO YOU WORK WITH PULSED OSCILLATORS WITHOUT
REGENERATIVE FEEDBACK

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SPC	SPC	SPC	SPC	SPC	SPC
176	177	178	179	180	181
182					

COUNTERS

TIMING CIRCUITS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-73K

	SPC	SPC	SPC	SPC	SPC	SPC	SPC	USE OF SIGNAL GENERATORS
	176	177	178	179	180	181	182	
M 761 M1-05 DO YOU WORK WITH BLOCKING OSCILLATORS	30	34	24	34	59	17	10	
M 762 M1-04 DO YOU USE OR REFER TO RISE TIME	29	32	24	44	34	17	0	
M 763 M1-07 DO YOU USE OR REFER TO FALL OR PLAYBACK TIME	30	36	22	40	57	13	0	
M 764 M1-08 DO YOU USE OR REFER TO SWEEP TIME	43	45	39	49	70	28	13	
M 765 M1-09 DO YOU USE OR REFER TO ELECTRICAL LENGTH OF SAWTOOTH WAVEFORMS	28	31	23	37	39	17	10	
M 766 M1-10 DO YOU USE OR REFER TO PHYSICAL LENGTH OF SAWTOOTH WAVEFORMS	31	32	31	41	36	19	17	
M 767 M1-11 DO YOU USE OR REFER TO LINEAR SLOPE OF SAWTOOTH WAVEFORMS	25	25	26	37	30	9	17	
M 768 M1-12 DO YOU USE OR REFER TO GATE LENGTH OF SAWTOOTH WAVEFORMS	29	29	28	40	34	15	10	
M 769 M2-01 DO YOU USE SIGNAL GENERATORS IN YOUR PRESENT JOB	70	66	77	76	75	48	77	
M 770 M2-02 DO YOU PERFORM OPERATIONAL CHECKS WHILE USING SIGNAL GENERATORS	68	65	73	81	73	46	63	
M 771 M2-03 DO YOU PERFORM PERIODIC MAINTENANCE SUCH AS ADJUSTING, ALIGNING, OR CALIBRATING WHILE USING SIGNAL GENERATORS	49	47	51	45	48	31	40	
M 772 M2-04 DO YOU TROUBLESHOOT TO AN ASSEMBLY OR SUBASSEMBLY WHILE USING SIGNAL GENERATORS	50	45	58	44	41	30	53	
M 773 M2-05 DO YOU TROUBLESHOOT TO THE SMALLEST REPLACEABLE COMPONENT WHILE USING SIGNAL GENERATORS	29	27	32	47	34	9	7	
M 774 M2-06 DO YOU USE AUDIO SINE-WAVE GENERATORS	58	58	57	68	73	37	53	
M 775 M2-07 DO YOU USE AUDIO NON-SINUSOIDAL WAVE GENERATORS SUCH AS SQUARE WAVE, TRIANGLE, PULSE, OR SPIKE	28	24	24	54	16	9	13	
M 776 M2-08 DO YOU USE RF GENERATORS LESS THAN 1,000 MHZ	28	26	31	53	14	9	10	
M 777 M2-09 DO YOU USE RF GENERATORS GREATER THAN 1,000 MHZ	33	33	34	60	34	11	10	
M 778 M2-10 DO YOU USE OTHER SPECIAL PURPOSE OR MULTI-PURPOSE GENERATORS	33	34	32	51	32	19	20	
M 779 M3-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY TASKS DEALING WITH ALTERNATING CURRENT OR DIRECT CURRENT MOTORS OR GENERATORS	80	47	54	59	64	33	30	
M 780 M3-02 DO YOU INSPECT MOTORS	48	45	53	40	41	30	27	
M 781 M3-03 DO YOU CLEAN OR LUBRICATE MOTORS	36	37	35	54	50	17	7	
M 782 M3-04 DO YOU OPERATE MOTORS	41	41	42	53	56	28	17	
M 783 M3-05 DO YOU REMOVE OR REPLACE COMPLETE MOTORS	44	45	50	60	61	24	20	
M 784 M3-06 DO YOU REMOVE OR REPLACE MOTOR PARTS	10	12	7	18	11	6	3	
M 785 M3-07 DO YOU TROUBLESHOOT AS FAR AS CHECKING WIRE CONNECTIONS OF MOTORS	46	45	49	59	57	31	23	
M 786 M3-08 DO YOU TROUBLESHOOT DOWN TO COMPONENT PARTS OF MOTORS	5	5	7	13	5	0	0	
M 787 M3-09 DO YOU PERFORM ANY TASKS ON FIELD COILS	2	3	1	6	2	0	0	
M 788 M3-10 DO YOU PERFORM ANY TASKS ON ARMATURES	4	3	7	9	5	0	0	
M 789 M3-11 DO YOU PERFORM ANY TASKS ON ROTORS	5	3	7	9	7	0	0	
M 790 M3-12 DO YOU PERFORM ANY TASKS ON BRUSHES	5	3	7	7	9	0	0	
M 791 M3-13 DO YOU PERFORM ANY TASKS ON SLIP RINGS	4	4	7	10	9	4	0	
M 792 M3-14 DO YOU PERFORM ANY TASKS ON COMMUTATORS	4	3	4	6	5	2	0	
M 793 M3-15 DO YOU PERFORM ANY TASKS ON POLE PIECES	2	2	1	4	0	2	0	

PCT MBRS RESPONDING 'YES' BY SELECTED GRPS

EPSUM9 PAGE 32

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

OY-TSK		SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
		176	177	178	179	180	181	182				
0 889	02-15 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER SUPPLIES	21	23	18	26	43	11	3				
0 890	02-16 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM CHARGING CHOKES AND CHARGING DIODES	15	16	12	16	32	9	0				
0 891	02-17 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE FORMING NETWORKS	20	21	19	25	39	11	3				
0 892	02-18 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TIMERS	19	21	15	31	27	9	3				
0 893	02-19 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM SWITCHES SUCH AS GAS THYRATROMS	10	9	11	12	18	6	0				
0 894	02-20 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM PULSE TRANSFORMERS	16	16	15	21	32	6	0				
0 895	02-21 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM TRANSMITTER TUBES	24	25	20	32	48	7	3				
0 896	02-22 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM RF AMPLIFIERS	20	19	20	25	34	11	3				
0 897	02-23 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM FREQUENCY CONVERTERS	17	18	15	24	34	7	3				
0 898	02-24 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM IF AMPLIFIERS	26	29	20	37	48	11	3				
0 899	02-25 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DETECTORS	20	21	16	26	32	11	3				
0 900	02-26 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM VIDEO AMPLIFIERS	13	12	14	24	7	9	0				
0 901	02-27 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM POWER VIDEO AMPLIFIERS	9	10	7	18	9	4	0				
0 902	02-28 DO YOU PERFORM TASKS ON PULSE MODULATION SYSTEM DON'T REMEMBER WHICH PULSE MODULATION SYSTEM STAGES (PRF)	6	7	4	10	5	4	3				
0 903	02-29 DO YOU USE OR REFER TO PULSE RECURRENCE FREQUENCY (PRF)	27	30	22	44	45	9	3				
0 904	02-30 DO YOU USE OR REFER TO PULSE RECURRENCE TIME (PRT)	25	27	20	41	36	9	3				
0 905	02-31 DO YOU USE OR REFER TO PULSE WIDTH (PW)	27	29	23	44	43	9	3				
0 906	02-32 DO YOU USE OR REFER TO PULSE SHAPE	25	27	19	40	39	9	3				
0 907	02-33 DO YOU USE OR REFER TO PEAK POWER	24	25	22	43	30	11	3				
0 908	02-34 DO YOU USE OR REFER TO AVERAGE POWER	22	23	19	35	34	7	3				
0 909	02-35 DO YOU CALCULATE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	14	14	14	21	23	6	0				
0 910	02-36 DO YOU MEASURE PULSE RECURRENCE TIME (PRT) OR PULSE RECURRENCE FREQUENCY (PRF)	20	21	18	28	39	9	0				
0 911	02-37 DO YOU USE FORMULAS TO CALCULATE AVERAGE POWER OR PEAK POWER OF PULSE MODULATION TRANSMIT SYSTEMS	8	8	8	19	5	4	0				
0 912	02-38 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION TRANSMITTER SCHEMATIC DIAGRAMS	21	23	19	34	39	7	0				
0 913	02-39 DO YOU TRACE SIGNALS OR CURRENT PATHS THROUGH PULSE MODULATION RECEIVER SCHEMATIC DIAGRAMS	23	26	18	35	39	9	3				
0 914	03-01 DO YOU WORK WITH ANTENNAS IN YOUR PRESENT JOB	66	71	63	93	91	39	7	ANTENNAS			
0 915	03-02 DO YOU INSPECT ANTENNAS	64	70	51	88	91	41	7				

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-YSK

[illegible]

PCT MORS RESPONDING 'YES' BY SELECTED GRPS

GPSUM9 PAGE 34

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

DY-TSK

SPC SPC SPC SPC SPC SPC SPC SPC
176 177 178 179 180 181 182

U 945 03-32 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC
ELEMENTS
O 946 03-33 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC
ELEMENTS SERVING AS DIRECTORS
O 947 03-34 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN PARASITIC
ELEMENTS SERVING AS REFLECTORS
O 948 03-35 DO THE ANTENNA ARRAYS YOU WORK WITH CONTAIN DON'T
REMEMBER WHAT KIND OF ELEMENTS
O 949 03-36 DO YOU WORK ON UNIDIRECTIONAL ANTENNAS
O 950 03-37 DO YOU WORK ON BIDIRECTIONAL ANTENNAS
O 951 03-38 DO YOU WORK ON DON'T REMEMBER THE DIRECTIONALITY
O 952 03-39 DO YOU WORK WITH ROTAR ANTENNA ARRAYS
P 953 01-01 IN YOUR PRESENT JOB DO YOU WORK WITH TRANSMISSION
LINES (TRANSMISSION LINES ARE DEFINED TO INCLUDE LEADS
BETWEEN RECEIVERS AND ANTENNAS, TELEPHONE LEADS, AS WELL
AS HIGH VOLTAGE POWER LINES, ETC. DO NOT CONSIDER
WAVEGUIDES AS TRANSMISSION LINES)
P 954 01-02 DO YOU REFER TO OR USE COPPER LOSS OR I2R LOSS IN
TRANSMISSION LINES
P 955 01-03 DO YOU REFER TO OR USE SKIN EFFECTS OF HIGH FREQUENCY
CURRENTS IN TRANSMISSION LINES
P 956 01-04 DO YOU REFER TO OR USE RADIATION LOSS IN TRANSMISSION
LINES
P 957 01-05 DO YOU USE OR REFER TO DIELECTRIC LOSS IN
TRANSMISSION LINES
P 958 01-06 DO YOU USE OR REFER TO LEAKAGE LOSSES IN TRANSMISSION
LINES
P 959 01-07 DO YOU WORK WITH TWISTED PAIR TRANSMISSION LINES
P 960 01-08 DO YOU WORK WITH THIN LEAD TRANSMISSION LINES
P 961 01-09 DO YOU WORK WITH OPEN TWO-WIRE TRANSMISSION LINES
P 962 01-10 DO YOU WORK WITH FLEXIBLE COAXIAL CABLE TRANSMISSION
LINES
P 963 01-11 DO YOU WORK WITH RIGID COAXIAL CABLE TRANSMISSION
LINES
P 964 01-12 DO YOU TROUBLESHOOT TRANSMISSION LINES
P 965 01-13 DO YOU ANALYZE VOLTAGE OR CURRENT WAVEFORMS IN
TRANSMISSION LINES TO DETERMINE THE TYPE OF TERMINATION
(OPEN, SHORTED, CAPACITIVE, INDUCTIVE)
P 966 01-14 DO YOU SELECT APPROPRIATE TRANSMISSION LINES
TERMINATIONS TO ACHIEVE DESIRED WAVEFORMS
P 967 01-15 DO YOU USE OR REFER TO SCHEMATIC SYMBOLS FOR LINE
TERMINATIONS IN TERMS OF CIRCUIT TERMINATIONS
P 968 01-16 DO YOU MEASURE STANDING WAVE RATIOS (SWR) OF
TRANSMISSION LINES
P 969 01-17 DO YOU CALCULATE STANDING WAVE RATIOS (SWR) OF
TRANSMISSION LINES
P 970 01-18 DO YOU PERFORM THE CALCULATIONS NECESSARY TO
DETERMINE THE IMPEDANCE AND LENGTH OF QUARTER - WAVELENGTH
MATCHING TRANSFORMERS TO MATCH TRANSMISSION LINES TO LOADS

TRANSMISSION
LINES

PCT MBS RESPONDING 'YES' BY SELECTED GRPS

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GPSUM9 PAGE 36

DY-TSK

SPC SPC SPC SPC SPC SPC SPC SPC

176 177 178 179 180 181 182

P 971 P1-19 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING MATCHING TRANSFORMERS

P 972 P1-20 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING DELTA MATCHING

P 973 P1-21 DO YOU SELECT THE TYPE OF TRANSMISSION LINE NEEDED
FOR PARTICULAR JOBS WITHOUT REFERRING TO TECHNICAL DATA

P 974 P1-22 DO YOU USE OR REFER TO THE TERM CHARACTERISTIC
IMPEDANCE (Z0) OF TRANSMISSION LINES

P 975 P1-23 DO YOU CALCULATE THE CHARACTERISTIC IMPEDANCE (Z0) OF
TRANSMISSION LINES

P 976 P1-24 DO YOU USE OR REFER TO THE TERM CUTOFF FREQUENCY OF
TRANSMISSION LINES

P 977 P1-25 DO YOU USE OR REFER TO THE TERM VELOCITY FACTOR (K)
OF TRANSMISSION LINES

P 978 P1-26 DO YOU COMPUTE THE ELECTRICAL LENGTH OF TRANSMISSION
LINES FOR PARTICULAR FREQUENCIES

P 979 P1-27 DO YOU CONSTRUCT TRANSMISSION LINES OF PARTICULAR
ELECTRICAL LENGTH FOR GIVEN FREQUENCIES

P 980 P1-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT AS THE
FREQUENCY INCREASES AND THE PHYSICAL LENGTH OF
TRANSMISSION LINES REMAIN CONSTANT, THE ELECTRICAL LENGTH
INCREASES

P 981 P1-29 DO YOU WORK WITH NONRESONANT (FLAT) TRANSMISSION
LINES

P 982 P1-30 DO YOU WORK WITH RESONANT TRANSMISSION LINES

P 983 P1-31 DO YOU WORK WITH TRANSMISSION LINES WHICH ARE MATCHED
TO LOADS USING STUB MATCHING

P 984 P2-01 DO YOU WORK WITH WAVEGUIDES OR CAVITY RESONATORS IN
YOUR PRESENT JOB

P 985 P2-02 DO YOU INSPECT WAVEGUIDES OR CAVITY RESONATORS

P 986 P2-03 DO YOU CLEAN WAVEGUIDES OR CAVITY RESONATORS

P 987 P2-04 DO YOU BEND WAVEGUIDES OR CAVITY RESONATORS

P 988 P2-05 DO YOU TWIST WAVEGUIDES OR CAVITY RESONATORS

P 989 P2-06 DO YOU PRESSURIZE WAVEGUIDES OR CAVITY RESONATORS

P 990 P2-07 DO YOU PURGE WAVEGUIDES OR CAVITY RESONATORS

P 991 P2-08 DO YOU TROUBLESHOOT WAVEGUIDES OR CAVITY RESONATORS

P 992 P2-09 DO YOU REMOVE OR INSTALL COMPLETE WAVEGUIDES

P 993 P2-10 DO YOU REMOVE OR INSTALL WAVEGUIDE SECTIONS

P 994 P2-11 DO YOU REMOVE OR INSTALL DUMMY LOADS

P 995 P2-12 DO YOU REMOVE OR INSTALL E BENDS

P 996 P2-13 DO YOU REMOVE OR INSTALL H BENDS

P 997 P2-14 DO YOU REMOVE OR INSTALL OTHER BENDS

P 998 P2-15 DO YOU REMOVE OR INSTALL CHOKE JOINTS

P 999 P2-16 DO YOU REMOVE OR INSTALL ROTATING JOINTS

P1000 P2-17 DO YOU REMOVE OR INSTALL DIRECTIONAL COUPLERS

P1001 P2-18 DO YOU REMOVE OR INSTALL BIDIRECTIONAL COUPLERS

P1002 P2-19 DO YOU USE OR REFER TO "A" WALL OF WAVEGUIDES

WAVEGUIDES AND
CAVITY RESONATORS

PCT MEMS RESPONDING 'YES' BY SELECTED GRPS

GPSUM9 PAGE 36

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
	176	177	178	179	180	181	182			
P1003 P2-20 DO YOU USE OR REFER TO "B" WALL OF WAVEGUIDES	8	10	4	13	11	2	3			
P1004 P2-21 DO YOU USE OR REFER TO CUTOFF FREQUENCY OF WAVEGUIDES	8	6	7	10	11	4	0			
P1005 P2-22 DO YOU USE OR REFER TO FREQUENCY-DETERMINING WALL OF WAVEGUIDES	7	9	3	10	9	4	0			
P1006 P2-23 DO YOU USE OR REFER TO POWER-DETERMINING WALL OF WAVEGUIDES	5	8	1	9	9	0	0			
P1007 P2-24 DO YOU USE OR REFER TO ELECTRIC FIELD BOUNDARY CONDITIONS	4	5	1	6	5	2	0			
P1008 P2-25 DO YOU USE OR REFER TO MAGNETIC FIELD BOUNDARY CONDITIONS	4	5	1	6	5	2	0			
P1009 P2-26 DO YOU USE OR REFER TO DUPLEXER FIELD BOUNDARY CONDITIONS	4	5	3	9	5	2	0			
P1010 P2-27 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST WAVEGUIDES ARE MADE WITH A "B" WALL SIZE OF .7 WAVELENGTHS	5	5	3	12	5	0	0			
P1011 P2-28 DO YOU USE OR REFER TO THE GENERAL RULE THAT MOST "A" WALLS RANGE FROM .2 TO .5 WAVELENGTHS IN SIZE, WITH .35 USED AS AN AVERAGE	3	4	0	9	0	0	0			
P1012 P2-29 ARE YOU CONCERNED WITH THE MATERIAL (SUCH AS BRASS) WHICH WAVEGUIDES ARE MADE OF	8	7	11	16	7	4	0			
P1013 P2-30 DO YOU COMPUTE THE LENGTH OF A WAVEGUIDE FOR SPECIFIC INSTALLATION	3	3	3	9	2	0	0			
P1014 P2-31 DO YOU USE THE RIGHT HAND RULE TO DETERMINE THE DIRECTION OF PROPAGATION, DIRECTION OF "E" FIELD, OR DIRECTION OF "H" FIELD IN WAVEGUIDES	3	3	3	7	0	0	0			
P1015 P2-32 DO YOU USE OR REFER TO THE TIME PHASE OF PEAK "E" OR "H" LINES IN WAVEGUIDES	2	2	1	6	0	0	0			
P1016 P2-33 DO YOU MEASURE THE TIME PHASE OF "E" OR "H" LINES IN WAVEGUIDES	1	2	0	4	0	0	0			
P1017 P2-34 DO YOU USE OR REFER TO THE SPACE QUADRATURE OF "E" OR "H" LINES IN WAVEGUIDES	2	3	0	6	0	0	0			
P1018 P2-35 ARE HIGH POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	8	9	7	12	14	4	0			
P1019 P2-36 ARE LOW POWER PROBES USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	12	13	11	18	23	4	3			
P1020 P2-37 ARE LOOPS USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	5	6	3	9	9	0	0			
P1021 P2-38 ARE APERTURES (WINDOWS OR IRISES) USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	20	21	18	29	30	7	0			
P1022 P2-39 ARE DON'T REMEMBER THE KIND OF ENERGY COUPLING USED ON WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH	25	27	23	38	30	19	7			
P1023 P2-40 DO YOU DETERMINE WHERE PROBES SHOULD BE MOUNTED IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	3	3	1	6	2	2	0			
P1024 P2-41 DO YOU DETERMINE THE POSITIONING OF LOOPS IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA	2	2	1	4	2	0	0			

PCT MORE RESPONDING 'YES' BY SELECTED CRPS

GPSUM PAGE 37

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

DY-TSK

P1025 P2-42 DO YOU DETERMINE THE POSITIONING OR SIZE OF APERTURES IN WAVEGUIDES OR CAVITY RESONATORS WITHOUT REFERRING TO TECHNICAL DATA

P1026 P2-43 ARE CHOKE JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

P1027 P2-44 ARE ROTATING JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

P1028 P2-45 ARE DON'T REMEMBER THE KIND OF JOINTS USED IN WAVEGUIDES OR CAVITY RESONATORS YOU WORK WITH

P1029 P2-46 DO YOU TUNE CAVITY RESONATORS USING CAPACITIVE TUNING

P1030 P2-47 DO YOU TUNE CAVITY RESONATORS USING INDUCTIVE TUNING

P1031 P2-48 DO YOU TUNE CAVITY RESONATORS USING VOLUME TUNING

P1032 P2-49 DO YOU TUNE CAVITY RESONATORS USING DON'T REMEMBER THE METHOD OF TUNING

P1033 P2-50 DO YOU MEASURE THE FREQUENCY OF SIGNALS IN CAVITY RESONATORS

P1034 P3-01 IN YOUR PRESENT JOB DO YOU WORK WITH KLYSTRONS, TRAVELING WAVE TUBES (TWT), PARAMETRIC AMPLIFIERS, OR MAGNETRONS

P1035 P3-02 DO YOU USE OR REFER TO INTERELECTRODE CAPACITANCE

P1036 P3-03 DO YOU USE OR REFER TO ELECTRON TRANSIT TIME

P1037 P3-04 DO YOU USE OR REFER TO LEAD INDUCTANCE

P1038 P3-05 DO YOU USE OR REFER TO RF LOSSES IN EXTERNAL CIRCUITRY

P1039 P3-06 DO YOU USE OR REFER TO PRINCIPLE OF ELECTRON VELOCITY MODULATION

P1040 P3-07 DO YOU USE OR REFER TO ELECTRON BUNCHING

P1041 P3-08 DO YOU WORK WITH TWO-CAVITY KLYSTRONS

P1042 P3-09 DO YOU WORK WITH THREE-CAVITY KLYSTRONS

P1043 P3-10 DO YOU WORK WITH REFLEX KLYSTRONS

P1044 P3-11 DO YOU WORK WITH TRAVELING-WAVE TUBES (TWT)

P1045 P3-12 DO YOU WORK WITH NONDEGENERATIVE PARAMETRIC AMPLIFIERS

P1046 P3-13 DO YOU WORK WITH UP-CONVERTER PARAMETRIC AMPLIFIERS

P1047 P3-14 DO YOU WORK WITH MAGNETRONS

P1048 P3-15 DO YOU INSPECT KLYSTRONS OR TWT

P1049 P3-16 DO YOU CLEAN KLYSTRONS OR TWT

P1050 P3-17 DO YOU TUNE KLYSTRONS OR TWT ELECTRICALLY

P1051 P3-18 DO YOU TUNE KLYSTRONS OR TWT MECHANICALLY

P1052 P3-19 DO YOU PERFORM OPERATIONAL CHECKS OF KLYSTRONS OR TWT

P1053 P3-20 DO YOU TROUBLESHOOT KLYSTRONS OR TWT

P1054 P3-21 DO YOU REMOVE OR REPLACE COMPLETE KLYSTRON OR TWT

P1055 P3-22 DO YOU REMOVE OR REPLACE KLYSTRON OR TWT COMPONENTS

P1056 P3-23 DO YOU INSPECT PARAMETRIC AMPLIFIERS

P1057 P3-24 DO YOU CLEAN PARAMETRIC AMPLIFIERS

P1058 P3-25 DO YOU ADJUST PARAMETRIC AMPLIFIERS

SPC SPC SPC SPC SPC SPC SPC SPC

176 177 178 179 180 181 182

3 2 4 9 0 0 0

8 9 7 13 14 4 0

29 32 24 32 55 15 3

21 23 18 32 23 19 7

10 11 8 12 20 4 3

7 8 5 10 11 2 0

14 16 8 15 27 7 0

19 19 19 26 27 13 3

28 32 22 35 52 15 7

47 50 42 45 70 30 7

MICROWAVE
AMPLIFIERS AND
OSCILLATORS

7 8 4 7 9 4 0

5 6 1 7 5 2 0

5 6 3 9 2 4 0

13 14 11 16 18 6 7

4 4 3 7 2 0 0

4 5 3 7 5 0 0

12 12 11 16 18 7 0

5 5 5 9 0 7 0

30 29 34 46 43 13 7

5 5 5 6 5 6 0

2 1 3 4 2 0 0

2 1 3 4 2 0 0

39 40 36 41 48 31 0

36 35 39 49 59 17 7

22 22 22 32 32 7 7

23 18 31 34 27 13 3

29 31 26 25 64 15 7

39 39 39 49 64 22 7

26 29 22 32 48 17 7

40 40 41 51 64 20 7

5 8 0 7 7 6 0

3 2 4 3 7 0 0

2 2 1 1 5 0 0

2 2 3 1 7 0 0

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

GP3UM9 PAGE 38

P1059	P3-26	DO YOU TUNE PARAMETRIC AMPLIFIERS
P1060	P3-27	DO YOU PERFORM OPERATIONAL CHECKS OF PARAMETRIC AMPLIFIERS
P1061	P3-28	DO YOU TROUBLESHOOT PARAMETRIC AMPLIFIERS
P1062	P3-29	DO YOU REMOVE OR REPLACE COMPLETE PARAMETRIC AMPLIFIER
P1063	P3-30	DO YOU REMOVE OR REPLACE PARAMETRIC AMPLIFIER COMPONENTS
P1064	P3-31	DO YOU INSPECT MAGNETRONS
P1065	P3-32	DO YOU CLEAN MAGNETRONS
P1066	P3-33	DO YOU ADJUST MAGNETRONS
P1067	P3-34	DO YOU TUNE MAGNETRONS
P1068	P3-35	DO YOU PERFORM OPERATIONAL CHECKS OF MAGNETRONS
P1069	P3-36	DO YOU TROUBLESHOOT MAGNETRONS
P1070	P3-37	DO YOU REMOVE OR REPLACE COMPLETE MAGNETRON
P1071	P3-38	DO YOU REMOVE OR REPLACE MAGNETRON COMPONENTS
P1072	P3-39	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS COLLECTOR PLATES
P1073	P3-40	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER CAVITIES
P1074	P3-41	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATCHER GRIDS
P1075	P3-42	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS FEEDBACK LOOPS
P1076	P3-43	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS DRIPT SPACES
P1077	P3-44	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER GRIDS
P1078	P3-45	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS BUNCHER CAVITIES
P1079	P3-46	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CONTROL GRIDS
P1080	P3-47	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TWO-CAVITY KLYSTRONS CATHODES
P1081	P3-48	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON REPELLER (REFLECTOR) PLATES
P1082	P3-49	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRIDS
P1083	P3-50	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON GRID CAVITY GAPS
P1084	P3-51	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON RESONANT CAVITIES
P1085	P3-52	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON MAGNETIC COUPLING LOOPS
P1086	P3-53	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON FILAMENTS
P1087	P3-54	DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTRON CATHODES

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

Dy-75K

	DY-TSK	SPC 176	SPC 177	SPC 178	SPC 179	SPC 180	SPC 181	SPC 182
P1088	P3-55 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF REFLEX KLYSTROM OUTPUT LEADS	14	14	15	25	11	6	7
P1089	P3-66 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES FILAMENTS	4	4	3	6	2	4	0
P1090	P3-57 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES CATHODES	4	5	1	6	2	4	0
P1091	P3-58 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MODULATOR GRIDS	3	3	1	3	2	4	0
P1092	P3-59 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ANODES	4	5	1	7	2	2	0
P1093	P3-60 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES HELICES	1	1	1	3	0	0	0
P1094	P3-61 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES COLLECTORS	4	4	3	7	2	2	0
P1095	P3-62 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES MAGNETS	5	7	3	9	2	7	0
P1096	P3-63 DO YOU USE OR REFER TO THE OPERATING PRINCIPLES OF TRAVELING-WAVE TUBES ATTENUATORS	7	9	4	13	7	6	0
P1097	P3-64 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE CIRCULATORS	2	3	0	1	2	2	0
P1098	P3-65 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER SIGNAL CAVITIES	1	2	0	1	0	2	0
P1099	P3-66 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER IDLER CAVITIES	1	1	0	1	0	0	0
P1100	P3-67 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER VARACTOR DIODES	1	1	1	1	2	0	0
P1101	P3-68 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER FERRITE ISOLATORS	3	3	1	1	7	2	0
P1102	P3-69 DO YOU PERFORM TASKS ON PARAMETRIC AMPLIFIER REVERSE-BIAS BATTERIES	1	1	0	1	0	0	0
P1103	P3-70 DO YOU PERFORM TASKS ON ANODES	4	5	1	6	5	4	0
P1104	P3-71 DO YOU PERFORM TASKS ON ANODE COOLING PINS	2	3	1	6	0	2	0
P1105	P3-72 DO YOU PERFORM TASKS ON COUPLING LOOPS	4	5	3	6	5	6	0
P1106	P3-73 DO YOU PERFORM TASKS ON HEATER LEADS	4	8	4	6	16	6	0
P1107	P3-74 DO YOU PERFORM TASKS ON RESONANT CAVITIES	4	5	1	4	7	4	0
P1108	P3-75 DO YOU PERFORM TASKS ON CATHODES	4	5	1	6	7	4	0
P1109	P3-76 DO YOU PERFORM TASKS ON MAGNETS	5	7	3	6	9	7	0
Q1110	Q1-01 DO YOU USE OR REFER TO STORAGE REGISTERS	25	25	24	50	14	9	7
Q1111	Q1-02 DO YOU USE OR REFER TO SHIFT REGISTERS	26	26	26	54	14	9	7
Q1112	Q1-03 DO YOU USE OR REFER TO LOGIC SYMBOLS OF SHIFT REGISTERS	24	23	26	50	14	9	3
Q1113	Q1-04 DO YOU USE OR REFER TO LOGIC SYMBOLS OF STORAGE REGISTERS	23	23	24	47	14	9	3
W1114	W1-05 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF SHIFT REGISTERS	18	19	16	37	11	7	7
W1115	W1-06 DO YOU TRACE THE DATA FLOW THROUGH LOGIC DIAGRAMS OF OTHER TYPE OF REGISTERS	16	16	16	32	9	7	7

TASK GROUP SUMMARY
PERCENT MEMBERS PERF

DY-7SK

DY-75K												
PHANTASTRONS												
CABLE FABRICATION												
INPUT/OUTPUT DEVICES												
PHOTO SENSITIVE DEVICES												
SYNCHRONOUS VIBRATIONS (CHOPPER CIRCUITS)												
INFRARED												
11140	RI-01 DO YOU WORK WITH PHANTASTRON CIRCUITRY IN YOUR PRESENT JOB	31	31	32	56	41	9	7	SPC	SPC	SPC	SPC
11141	R2-01 IN YOUR PRESENT JOB DO YOU WORK WITH SCHMITT TRIGGER CIRCUITS	35	34	38	43	27	17	7	176	177	178	179
11142	R2-02 DO YOU TRACE DATA FLOW THROUGH SCHMITT TRIGGER SCHEMATIC DIAGRAMS	26	25	30	43	20	17	0	180	181	182	183
11143	R2-03 DO YOU USE OR REFER TO SCHMITT TRIGGER LOGIC SYMBOLS	21	23	18	41	20	11	0	184	185	186	187
11144	R3-01 IN YOUR PRESENT JOB DO YOU FABRICATE MULTICONDUCTOR CABLES	58	61	53	68	75	46	30	188	189	190	191
11145	R3-02 DO YOU FABRICATE COAXIAL CABLES	41	42	59	72	89	39	33	192	193	194	195
11146	S1-01 IN YOUR PRESENT JOB DO YOU PERFORM ANY TASKS ON VISUAL HEADOUT SYSTEMS	55	55	55	75	45	41	40	196	197	198	199
11147	S1-02 DO YOU PERFORM ANY TASKS ON NIXIE LIGHTS OR NIXIE LIGHT DECODER SYSTEMS	15	16	15	24	14	7	0	200	201	202	203
11148	S1-03 DO YOU ANALYZE NIXIE LIGHT DECODER SYSTEMS USING BOOLEAN ALGEBRA	7	8	4	15	5	2	0	204	205	206	207
11149	S2-01 DO YOU WORK WITH PHOTO TUBES IN YOUR PRESENT JOB	10	11	9	26	7	2	0	208	209	210	211
11150	S3-01 IN YOUR PRESENT JOB DO YOU WORK WITH CHOPPER CIRCUITS	15	14	14	12	9	17	20	212	213	214	215
11151	S3-02 DO YOU MEASURE EXCITATION FREQUENCIES	5	5	4	3	5	6	3	216	217	218	219
11152	S3-03 DO YOU MEASURE VOLTAGE-CURRENT PHASE RELATIONSHIPS	2	2	3	1	2	0	3	220	221	222	223
11153	S3-04 DO YOU USE OR REFER TO EXCITATION FREQUENCIES	5	5	5	1	7	4	7	224	225	226	227
11154	S3-05 DO YOU USE OR REFER TO VOLTAGE-CURRENT PHASE RELATIONSHIPS	2	1	4	0	0	2	7	228	229	230	231
11155	S3-06 DO YOU USE SERVOS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	10	8	14	6	7	11	13	232	233	234	235
11156	S3-07 DO YOU USE DETECTORS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	8	7	11	4	5	9	10	236	237	238	239
11157	S3-08 DO YOU USE ERROR SIGNAL DEVICES IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	9	8	11	4	7	11	7	240	241	242	243
11158	S3-09 DO YOU USE COMPARISON CIRCUITS IN CONJUNCTION WITH CHOPPER CIRCUIT OPERATION	8	6	11	4	7	7	10	244	245	246	247
11159	T1-01 DOES YOUR PRESENT JOB INVOLVE ANY TASKS DEALING WITH INFRARED SYSTEMS	0	1	0	0	2	0	0	248	249	250	251
11160	T1-02 DO YOU INSPECT INFRARED SYSTEMS	0	0	0	0	0	0	0	252	253	254	255
11161	T1-03 DO YOU CLEAN INFRARED SYSTEMS	0	0	0	0	0	0	0	256	257	258	259
11162	T1-04 DO YOU ADJUST OR CALIBRATE INFRARED SYSTEMS	0	0	0	0	0	0	0	260	261	262	263
11163	T1-05 DO YOU OPERATE INFRARED SYSTEMS	0	0	0	0	0	0	0	264	265	266	267
11164	T1-06 DO YOU TROUBLESHOOT WIRE CONNECTIONS OF INFRARED SYSTEMS	0	0	0	0	0	0	0	268	269	270	271
11165	T1-07 DO YOU TROUBLESHOOT MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	0	272	273	274	275
11166	T1-08 DO YOU TROUBLESHOOT DOWN TO INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	0	276	277	278	279
11167	T1-09 DO YOU REMOVE OR REPLACE MAJOR ASSEMBLIES OF INFRARED SYSTEMS	0	0	0	0	0	0	0	280	281	282	283
11168	T1-10 DO YOU REMOVE OR REPLACE INFRARED SYSTEM COMPONENT PARTS	0	0	0	0	0	0	0	284	285	286	287

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

0Y-Y5K

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PCT MORS RESPONDING 'YES' BY SELECTED GRPS

GPSUM9 PAGE 43

TASK GROUP SUMMARY PERCENT MEMBERS PERFORMING

		DT-TSK											
		SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
		176	177	178	179	180	181	182	183	184	185	186	187
T1210 12-25 DO YOU WORK WITH HALF SILVERED (928 REFLECTIVE) MIRRORS		0	0	0	0	0	0	0	0	0	0	0	0
T1211 12-26 DO YOU WORK WITH MELICAL FLASHTUBES		0	0	0	0	0	0	0	0	0	0	0	0
T1212 12-27 DO YOU WORK WITH RUBY		0	0	0	0	0	0	0	0	0	0	0	0
T1213 12-28 DO YOU WORK WITH HELIUM-NEON		0	0	0	0	0	0	0	0	0	0	0	0
T1214 12-29 DO YOU WORK WITH HELIUM-NEON		0	0	0	0	0	0	0	0	0	0	0	0
T1215 12-30 DO YOU WORK WITH XENON		0	0	0	0	0	0	0	0	0	0	0	0
T1216 12-31 DO YOU WORK WITH CESIUM-HELIUM		0	0	0	0	0	0	0	0	0	0	0	0
T1217 12-32 DO YOU WORK WITH ARGON		0	0	0	0	0	0	0	0	0	0	0	0
T1218 12-33 DO YOU WORK WITH NEODYMIUM IN GLASS		0	0	0	0	0	0	0	0	0	0	0	0
T1219 12-34 DO YOU WORK WITH SALLIUM ARSENIDE		0	0	0	0	0	0	0	0	0	0	0	0
T1220 13-01 IN YOUR PRESENT JOB DO YOU WORK WITH DISPLAY TUBES, SUCH AS DIRECT VIEW STORAGE (DVST) OR MULTIPLE MODE STORAGE TUBES (HMST)		22	18	31	50	5	13	0					
T1221 13-02 DO YOU INSPECT DVST OR HMST		20	14	27	44	5	9	0					
T1222 13-03 DO YOU CLEAN DVST OR HMST		16	14	20	35	5	9	0					
T1223 13-04 DO YOU ADJUST OR CALIBRATE DVST OR HMST		16	14	20	37	2	6	0					
T1224 13-05 DO YOU OPERATE SYSTEMS THAT CONTAIN DVST OR HMST		22	18	30	49	5	13	0					
T1225 13-06 DO YOU TROUBLESHOOT DVST OR HMST CIRCUITS		17	15	22	38	5	9	0					
T1226 13-07 DO YOU REMOVE OR REPLACE DVST OR HMST TUBES FROM MAJOR ASSEMBLIES OR UNITS		17	15	22	37	5	9	0					
T1227 13-08 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF DVST		10	8	14	21	2	6	0					
T1228 13-09 DO YOU PERFORM TASKS THAT MAKE IT NECESSARY TO NAME THE VARIOUS ELEMENTS OF HMST		4	3	4	9	0	2	0					
T1229 13-10 DO YOU PERFORM TASKS ON FLOOD GUNS		9	7	14	19	5	2	0					
T1230 13-11 DO YOU PERFORM TASKS ON WHITE GUNS		6	7	9	15	5	2	0					
T1231 13-12 DO YOU PERFORM TASKS ON ATTACK GUNS		2	2	1	6	0	0	0					
T1232 13-13 DO YOU PERFORM TASKS ON ERASE GUNS		9	7	12	18	5	2	0					
T1233 13-14 DO YOU PERFORM TASKS ON STORAGE GRIDS		7	5	11	13	5	2	0					
U1234 U1-01 IN YOUR PRESENT JOB, DO YOU PERFORM ANY PROGRAMMING TASKS		29	26	35	65	25	6	0					
U1235 U1-02 DO YOU USE OR REFER TO DECIMAL SYSTEMS		19	18	22	43	14	0	0					
U1236 U1-03 DO YOU USE OR REFER TO PROGRAMS		28	27	30	63	25	4	0					
U1237 U1-04 DO YOU USE OR REFER TO HEXIDECIMAL SYSTEMS		5	6	1	4	14	0	0					
U1238 U1-05 DO YOU USE OR REFER TO 8-4-2-1 SYSTEMS		8	8	7	13	9	0	0					
U1239 U1-06 DO YOU USE OR REFER TO FOUR SYSTEMS		2	3	1	4	2	0	0					
U1240 U1-07 DO YOU USE OR REFER TO BINARY SYSTEMS		23	22	26	57	14	2	0					
U1241 U1-08 DO YOU USE OR REFER TO TIME-SHARING		11	11	12	26	7	0	0					
U1242 U1-09 DO YOU USE OR REFER TO DATA WORDS		26	23	31	60	18	4	0					
U1243 U1-10 DO YOU USE OR REFER TO ADDRESS WORDS		25	23	31	60	14	4	0					
U1244 U1-11 DO YOU USE OR REFER TO ADDRESS/SUBADDRESS		22	19	27	53	14	2	0					
U1245 U1-12 DO YOU USE OR REFER TO STEERING/INFORMATION		15	14	18	35	16	0	0					
U1246 U1-13 DO YOU USE OR REFER TO INFORMATION WORDS		24	21	28	54	20	2	0					
U1247 U1-14 DO YOU PERFORM TASKS ON SINGLE LEVEL PROGRAMMING		18	14	20	38	14	4	0					
U1248 U1-15 DO YOU PERFORM TASKS ON MULTI-LEVEL PROGRAMMING		11	12	8	25	11	2	0					

DISPLAY TUBES

PROGRAMMING

TASK GROUP SUMMARY
PERCENT MEMBERS PERFORMING

6Y-75K

DY-TSK		SPC	SPC	SPC	SPC	SPC	SPC	SPC	SPC
		176	177	178	179	180	181	182	
U1299	U1-16 00 YOU PERFORM TASKS ON INPUT DEVICES	20	20	22	50	11	0	0	
U1250	U1-17 00 YOU PERFORM TASKS ON STORAGE DEVICES	20	20	22	53	7	0	0	
U1251	U1-18 00 YOU PERFORM TASKS ON ARITHMETIC SECTIONS	20	20	21	18	49	0	0	
U1252	U1-19 00 YOU PERFORM TASKS ON CONTROL SECTIONS	21	21	22	54	11	0	0	
U1253	U1-20 00 YOU PERFORM TASKS ON OUTPUT DEVICES	21	21	22	53	14	0	0	
U1254	U1-21 00 YOU PERFORM TASKS ON POWER SUPPLIES	22	21	22	53	14	0	0	
U1255	U2-01 00 YOU USE DECIBELS TO EXPRESS AMPLIFICATION AND ATTENUATION	48	51	42	63	64	33	7	
U1256	U2-02 00 YOU USE LOGARITHMS TO COMPUTE OUTPUT POWER IN DECIBELS	8	10	4	13	9	4	0	
U1257	U2-03 00 YOU USE LOGARITHMS TO COMPUTE ATTENUATION IN DECIBELS	8	10	4	13	11	4	0	
U1258	U2-04 DUMMY TASK TO IDENTIFY INCUMBENTS WHO PERFORMED NO TASKS	0	0	1	0	0	0	3	

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AVIONIC INERTIAL AND RADAR NAVIGATION SYSTEMS SPECIALIST AFSC 3--ETC(U)
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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER AFPT 90-328-222	2. GOVT ACCESSION NO. AD A046095/634	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Avionic Inertial and Radar Navigation Systems Specialist AFSC 32854		5. TYPE OF REPORT & PERIOD COVERED FINAL April 77 - June 77
7. AUTHOR(s) Thomas J. O'Connor Elena J. Weber		6. PERFORMING ORG. REPORT NUMBER
9. PERFORMING ORGANIZATION NAME AND ADDRESS Occupational Survey Branch USAF Occupational Measurement Center Lackland AFB TX 78236		8. CONTRACT OR GRANT NUMBER(s)
11. CONTROLLING OFFICE NAME AND ADDRESS SAME AS ITEM 9		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS N/A
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		12. REPORT DATE 22 September 1977
		13. NUMBER OF PAGES 4
		15. SECURITY CLASS. (of this report) UNCLASSIFIED
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Approved for public release; distribution unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Electronic principles Electronics Basic electronics Air Force training Avionics Teaching methods Electronic equipment Training Electronic technicians		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report summarizes the results of the administration of the Electronic Principles Inventory to airmen assigned as Avionic Inertial and Radar Navigation Systems Specialist (AFSC 32854). The report gives a detailed listing of the technical tasks and knowledge needed to perform the jobs within the specialty or career ladder.		

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→ This specialty has the following functions:

Installs, maintains, and repairs avionic inertial and radar navigational equipment. Performs preventive maintenance on avionic inertial and radar navigational equipment. Installs avionic inertial and radar navigational equipment. Repairs avionic inertial and radar navigation equipment. Maintains inspection and maintenance records. Supervises avionic inertial and radar navigation systems personnel. ↗

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